Selective Therapeutic Interchange Practices in Ontario Acute Care Hospitals

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ABSTRACT

Background: Therapeutic interchange is a means of decreasing drug costs within a hospital formulary system. Little is known about the substitutions made by hospitals that use this approach.

Objectives: To determine, for Ontario, which agents are used within selected classes of cardiovascular medications and proton pump inhibitors and to determine whether medications available in generic formulations are used.

Methods: A questionnaire was sent to pharmacy directors at all 177 acute care hospitals in Ontario, Canada.

Results: Among the 166 hospitals that responded to the survey (response rate 94%), 141 (85%) reported therapeutic interchange programs. Of the hospitals reporting such programs, 76 (54%) included therapeutic interchange of cardiovascular medications. Most frequently included were HMG (3-hydroxy-3-methylglutaryl) CoA reductase inhibitors (statins) (63/141 or 45%), followed by angiotensin converting-enzyme inhibitors (47/141 or 33%) and angiotensin II receptor blockers (20/141 or 14%). Atorvastatin, ramipril, and losartan were the most commonly used in their respective classes. Proton pump inhibitors were included in 116 (82%) of the therapeutic interchange programs. Lansoprazole, pantoprazole, and omeprazole were used almost equally. Medications available in generic formulations were never the most commonly substituted in any class.

Conclusions: Therapeutic interchange is practised by most hospital formulary systems, and there is considerable variation in the specific agents used. The observed lack of use of medications that are available in generic formulations may extend to the outpatient setting.

Key words: therapeutic interchange, therapeutic substitution, formulary, pharmacy

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RÉSUMÉ

Historique : L'interchangeabilité ou substitution thérapeutique est une façon de réduire le coût des médicaments dans le contexte des formulaires de médicaments des hôpitaux. On sait peu de choses des hôpitaux qui utilisent ce système de substitution.

Objectifs : Déterminer, pour l'Ontario, quels sont les agents utilisés au sein de classes choisies d'agents cardiovasculaires et d'inhibiteurs de la pompe à protons et déterminer si les génériques de ces médicaments sont utilisés.

Méthodes : Un questionnaire a été envoyé aux directeurs de pharmacie de 177 hôpitaux de soins de courte durée en Ontario (Canada).

Résultats : Des 166 hôpitaux qui ont répondu au sondage (taux de réponse de 94 %), 141 (85 %) ont déclaré avoir des programmes de substitution thérapeutique. Parmi les hôpitaux qui ont déclaré utiliser de tels programmes, 76 (54 %) avaient recours à la substitution des agents cardiovasculaires. Les agents le plus souvent substitués étaient les inhibiteurs de la 3-hydroxy-3-méthylglutaryl coenzyme A (HMG-CoA) réductase (statines) (63/141 ou 45 %), suivis des inhibiteurs de l'enzyme de conversion de l'angiotensine (47/141 ou 33 %) et des antagonistes des récepteurs de l'angiotensine II (20/141 ou 14 %). L'atorvastatine, le ramipril et le losartan étaient les plus couramment prescrits dans leur classe respective. Les inhibiteurs de la pompe à protons faisaient partie des programmes de substitution thérapeutique de 116 (82 %) hôpitaux. Le lansoprazole, le pantoprazole et l'oméprazole étaient utilisés de façon presque similaire. Les médicaments offerts sous leur forme générique n'étaient jamais ceux qui étaient le plus souvent substitués dans toutes les classes.

Conclusions : La substitution thérapeutique est utilisée dans presque tous les systèmes de formulaires de médicaments des hôpitaux, et l'agent utilisé diffère considérablement. L'absence de recours aux médicaments offerts sous leur forme générique peut s'étendre au milieu communautaire.

Mots clés : interchangeabilité, substitution thérapeutique, formulaire de médicaments, pharmacie

INTRODUCTION

Health care represents an increasing economic burden in North America and much of the developed world. The cost of prescription medications, which has been increasing at a rate many times that of inflation, has played a major role in this growing problem.[1] In response, hospitals and other health care organizations have adopted a number of measures aimed at obtaining clinically effective drugs at affordable prices.[2,3] One such measure is therapeutic interchange.

Therapeutic interchange is the preauthorized exchange of different medications within the same pharmaceutical class.[4] This process is distinct from generic substitution, wherein a generic version of the same active chemical agent is used. The guidelines on therapeutic interchange of the American College of Clinical Pharmacy advise that "once an institution or health system determines that certain drugs are deemed equivalent within a class, a competitive bidding process can be undertaken with drug manufacturers."[5] Concerns have been expressed by a number of medical bodies regarding therapeutic interchange, but gradual acceptance of the practice, in both inpatient and outpatient settings, has evolved, albeit with many caveats.[4,6] For example, the prevalence of such programs among North American hospitals increased from about 20% to 90% between 1992 and 1999.[7-9]

Previous studies have examined the classes of agents most often covered by therapeutic interchange programs.[7,8] However, little is known regarding the frequency with which specific agents are chosen as substitutes. We sought to characterize the most commonly substituted drugs within a group of clinically important long-term medications and the frequency of use of medications available in generic formulations.

METHODS

A standard questionnaire was used to inquire about therapeutic interchange programs in Ontario hospitals. All acute care hospitals in Ontario are public, not-for-profit hospitals that receive a global funding budget from Ontario's Ministry of Health and Long-Term Care.

Several classes of cardiovascular medications (angiotensin-converting enzyme [ACE] inhibitors, angiotensin II receptor blockers [ARBs], and HMG [3-hydroxy-3-methyl-glutaryl] CoA reductase inhibitors [statins]) were included in this study because of their clinical importance, their ubiquity, and the controversy surrounding their inclusion in therapeutic interchange programs.[10,11] Proton pump inhibitors (PPIs) were chosen as a comparison group because they are commonly included in therapeutic interchange programs but are relatively well accepted in this context.[7,8,12]

The questionnaire was pilot-tested and then mailed in July 2002 to the pharmacy directors at all 177 adult acute care hospitals in Ontario. The survey inquired about the existence of a therapeutic interchange program and, if such were present, the medication classes covered by the program and the specific agent substituted within each class.

The provincial ministry's drug formulary was consulted to determine which medications were available in generic formulations at the time.[13] Therefore, respondents did not need to provide complete information on use of generic formulations in the individual drug classes. Descriptive and summary statistics are presented. Ethics approval for this study was obtained from the St Michael's Hospital Research Ethics Board.

RESULTS

Pharmacy directors at 166 (94%) of the 177 hospitals completed and returned the survey. Nonresponding hospitals were generally smaller (fewer than 150 beds) and located in rural areas. Of the 166 responding hospitals, 13 (8%) were academic centres, and 141 (85%) had a therapeutic interchange program.

Among the hospitals reporting therapeutic interchange, 76 (54%) reported policies involving at least one of the selected cardiovascular medication classes (Table 1). Of these, statins were the most commonly represented (63/141 or 45%), followed by ACE inhibitors (47/141 or 33%) and ARBs (20/141 or 14%). The most commonly chosen substitutes within each class included atorvastatin for the statins and ramipril for the ACE inhibitors; losartan and irbesartan were almost equally represented in the ARB class. PPI agents were used in 116 (82%) of the therapeutic interchange programs. Lansoprazole, omeprazole, and pantoprazole were used with almost equal frequency. The statin and ACE inhibitor classes each had medications available in generic formulations, but these were never the most commonly substituted drugs.

In most hospitals, only one drug within a class was used as a substitute. Some, however, used multiple substitutes within a given class. ACE inhibitors most commonly had multiple substitutes (20 [43%] of 47 hospitals with therapeutic interchange for ACE inhibitors), followed by ARBs (5/20 or 25%), statins (9/63 or 14%), and PPIs (5/116 or 4%).

Table 1. Prevalence of Classes and Specific Agents within Therapeutic Interchange Programs in Ontario Hospitals

Therapeutic Class and Drug*	No. (%) of Hospitals†
Angiotensin-converting enzyme inhibitors (*n* = 47)	
Ramipril	38 (81)
Enalapril	16 (34)
Lisinopril‡	13 (28)
Captopril‡	10 (21)
Fosinopril	5 (11)
Quinapril	2 (4)
Angiotensin II receptor blockers (*n* = 20)	
Losartan	9 (45)
Irbesartan	8 (40)
Valsartan	4 (20)
Candesartan	3 (15)
Telmisartan	1 (5)
HMG coA reductase inhibitors (statins) (*n* = 63)	
Atorvastatin	42 (67)
Simvastatin	15 (24)
Pravastatin‡	10 (16)
Fluvastatin	4 (6)
Lovastatin‡	3 (5)
Proton pump inhibitors (*n* = 116)	
Pantoprazole	43 (37)
Lansoprazole	38 (33)
Omeprazole	38 (33)
Esomeprazole	2 (2)

*Each *n* value represents the number of hospitals with a therapeutic interchange policy for the specified drug class.

†Some hospitals reported use of multiple agents within a given class; therefore, the total number of substitutes within a class is greater than the number of hospitals reporting therapeutic interchange policies for each class (and the percentages for each class sum to more than 100).

‡Available in generic form.

DISCUSSION

The findings reported here are consistent with the results of previous studies demonstrating widespread use of therapeutic interchange in hospitals.[7,8] The 94% response rate allows confidence that the results are representative of therapeutic practices in acute care hospitals. In keeping with previous findings, PPIs were included in the vast majority of therapeutic interchange programs, whereas the involvement of cardiovascular agents, although substantial, was more limited.[7,8]

This study extends previous findings through analysis of the specific agents chosen for therapeutic interchange within different classes. Significant variation in the substitute chosen was evident for all classes studied. This variation may represent the diverse outcomes of bidding processes at different hospitals. Other explanations might include judgements by a hospital's pharmacy and therapeutics committee regarding the evidence supporting use of one drug over another, level of familiarity with an agent, preferential purchasing arrangements with certain manufacturers, differing availability of agents in particular locales, and the possible influence of competing interests.

Notably, medications with generic formulations were available for 2 of the classes studied but were never the most commonly substituted agents. Generic medications typically have less expensive acquisition costs than proprietary medications in the same class. On the assumption that cost serves as the basis for selecting a substitute, this finding implies that proprietary drugs have been offered to hospitals at prices undercutting those of comparable generic formulations. Inclusion of a nongeneric drug within a hospital's therapeutic interchange program might allow the manufacturer to capture both new and existing prescriptions.[14] Such market capture is especially valuable with the medications selected for this study, as they are all taken on a long-term basis. Therefore, listing of proprietary long-term medications in therapeutic interchange programs may well shift some of the cost saved by hospitals to patients or insurers after discharge.

This study had limitations. First, the survey was limited to acute care hospitals in Ontario in 2002. There may be more variation in purchasing practices and agreements in other provinces, which may result in different choices for therapeutic interchange. However, the findings are consistent with other reports in terms of the prevalence of interchange programs and the drug classes included in such programs. As well, we doubt that the prevalence of therapeutic interchange has decreased substantially since the survey was conducted. Still, the introduction of additional generic medications might have changed practices for individual drug classes. Second, for simplicity and to ensure a high response rate, only selected long-term medications were covered in this survey. Most hospitals practice therapeutic interchange for medication classes other than the ones studied here, and in those cases, the pattern of substitution may be different.[7,8] Third, the reason for choosing an individual substitute is probably influenced by multiple factors, but these reasons were not assessed in this survey. In particular, we did not inquire why hospitals selected medications other than those available in generic formulations, nor did we ask whether hospitals' activities, such as involvement in research, resulted in product cost discounts from the research

sponsor. Therefore, claims about cost shifting are speculative and require further study.

The increasing need to manage the challenge posed by rising pharmaceutical costs has led to near-universal implementation of therapeutic interchange in hospital settings. Many real and potential benefits of this practice to health care organizations, pharmacists, physicians, and patients have been identified.[2,15-18] Some concerns about the implications of therapeutic interchange with respect to patient safety have been raised, but there has been little discussion about potential adverse economic consequences.[10,11,15,19,20] The paucity of research on the effects of therapeutic interchange suggests that insufficient oversight has accompanied widespread implementation of such policies. Given this reality, it is incumbent upon researchers to better define the risks posed by therapeutic interchange and other potentially cost-saving measures.

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